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Spider studies in Egypt
A review

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Abstract

The first scientific record of spiders in Egypt was that of Linnaeus (1758). It was succeeded by several records and taxonomic studies by Forskål, Savigny & Audouin (in *Description de l'Égypte*), Koch, Pickard-Cambridge, Simon, and Denis. Thereafter, in 1950, the native araneologist Hassan was the first Egyptian in this field. At the end of the 1990's, a new era began with ecological studies on spiders by several scientists to extend the scope of spider studies in Egypt beyond the boundaries of taxonomy. This review includes 6 parts: I. The beginnings, II. The first Egyptian and his successor, III. Universities theses, IV. Ecological and applied research, V. Artificial works, and VI. Bibliography.

Keywords: Spiders, Review, Egypt.

I. The Beginnings

Although spiders were well known to people in Egypt since ancient times, we cannot find any scientific publication on Egyptian spiders before 1758. *Aranea flavissima* was the first spider species to be scientifically recorded from Egypt by Carolus Linnaeus, 1707-1778. His very brief description (1758), in the 10th edition of his "Systema Naturae" p.622 [22. Aranea abdomine oblongo flavissimo laevi. *M. L. U. Habitat in* Aegypto. *Hasselqvist. Thorax fulvus. Pedes glabri.*], is not enough to identify such a species as Simon (1910) stated.

The second scientific record of spiders from Egypt was that of the Swedish Petrus Forskål, 1732-1763, who visited Egypt in 1761-1762 with a Danish expedition to Yemen and described four spider species from the region of Cairo : *Aranea citricola*, *A. insidiatrix, A. rivulata* and *A. trifasciata*. His descriptions were more detailed and, at

least, enough for identification. His work was published after his death, during the expedition, by Carsten Niebuhr in Copenhagen (1775).

The third and most important study of Egyptian arachnids was the work of Marie-Jules-Cesar-Lelorgne de Savigny, 1777-1851, who accompanied the French military expedition of Napoleon in Egypt (1799-1801). His work was completed by his student Victor Audouin, 1797-1841, because of his professor's blindness. That work appeared in 1825 under the title "*Explication sommaire des planches d'Arachnides de l'Égypte et de la Syrie, publiée par Jules-César Savigny, membre de l'Institut; offrant un exposé des caractères naturels des genres, avec la distinction des espèces*." *Histoire naturelle, t. I, no.4*., a volume of the great book entitled: "*Description de l'Égypte ou Recueil des observations et des recherches qui ont été faites en Égypte pendant l'Expédition de l'armée française.*". This work was reprinted in 1827 in a smaller format. It was included in volume 22 of that second edition, which was always referred to by most authors and researchers.

The work of Savigny and Audouin included nine plates (112 figures) of drawings of arachnids.

- Plates 1-7: spiders (81 species of 30 genera classified in 20 groups) = 71 species + 6 synonyms + 5 nomina dubia (in the most recent classification).
- Plate 8 : figs. 1-3 scorpions : 3 species of *Scorpio* = 3 spp.; figs. 4-6 pseudoscorpions : 3 *Chelifer* spp. = 2 spp. + 1 n.d.; figs. 7-10 solpugids : 4 *Solpuga* spp. = 3 spp. + 1 syn.
- Plate 9 : figs. 1-3 opilionids : 3 *Phalangium* spp. = 1 sp. + 2 n.d.; figs. 4-13 acarids : 10 spp. of 3 genera = 6(+2) spp. + 1 syn. + 1 n.d.

Every figure group of a species includes a habitus drawing and minor details drawings.

The text and the nine plates were edited and reprinted by El-Hennawy in *Serket*, 3(2-4) (Audouin, 1993). The exact date of publication and the authority of the scientific names dealt with in the work of Audouin (1825) were discussed in detail by El-Hennawy (2000a).

The fourth step was that of the German Ludwig Carl Koch, 1825-1908, who recorded 15 species of spiders from Cairo, Egypt in his "*Aegyptische und Abyssinische Arachniden*" (1875), 7 of them as new species.

The fifth step was the "*Catalogue of a collection of spiders made in Egypt, with descriptions of new species and characters of a new genus*" (1876) of the English Rev. Octavius Pickard-Cambridge, 1828-1917, who previously studied a collection of Arachnida from Sinai (1870), and spiders of Palestine and Syria (1872a) including records from Egypt, and new gnaphosoid species from Egypt and other countries (1874), in addition to a description of a new linyphiid spider from Alexandria (1872b).

The Rev. Pickard-Cambridge visited Egypt in 1864, in his way to Jerusalem (a holy pilgrimage trip). He devoted his time and life to the study of spiders in his country, England, and wished to broaden the geographical scope of his interest by studying the spiders of Palestine (the Holy Land) and Egypt. Cambridge's Catalogue included 164 species from Alexandria to Assuan (63 of them as new species). The total spider species number raised to 226.

The French Eugène Simon, 1848-1924, who is the father of arachnology in the modern times, recorded and described new species of spiders, scorpions, sun-spiders and pseudoscorpions from Egypt in several papers during the period 1880-1910. Two of his works (1908 & 1910) about Eresidae spiders and scorpions were published in the bulletin of the entomological society of Egypt.

Jacques Denis, 1902-1972, continued the French activity by scattered records in different papers (1935-1965), through his studies of North African spiders, in addition to his remarkable work on spiders of Siwa Oasis (1947b) which was also published by

the entomological society of Egypt. In this work, he recorded 89 species, 25 of them as new species.

II. The first Egyptian and his Successor

The first Egyptian araneologist, Abbas Ibrahim Hassan was a professor of zoology in Cairo University when he described *Chaetopelma shabati* Hassan, 1950 as a new species of Theraphosidae from Cairo. He deposited the type material of this species in the British Museum of Natural History (London). He published another paper about the Oecobiidae of Egypt (1953). Thereafter, he went to Syria to continue his pedagogical activity and to stop publishing works about spiders. He prepared unpublished list of 318 Egyptian spider species, a long work on Egyptian jumping spiders (Salticidae) and a few short papers. One of his works "Feeding and feeding apparatus of *Chaetopelma shabati*", prepared for publication in 1953, was revised and published in *Serket* in 1988.

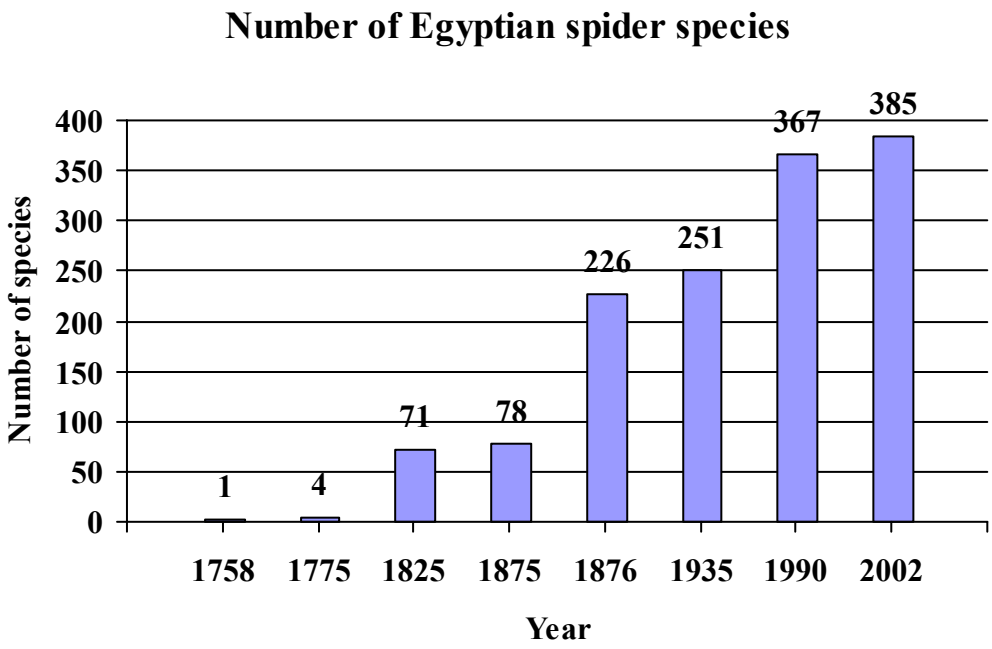

Fig. 1. Number of Egyptian spider species (1758-2002).

In 1982, Hisham K. El-Hennawy presented his first paper on a pompilid wasp (Hymenoptera: Pompilidae) and an eresid spider to the first Egypt's National Conference of Entomology, Cairo 1982 (published 1985). A year later, he presented his second paper to the 9th International Congress of Arachnology, Panama 1983 (published 1986). In August 1987, he began publishing ***SERKET***, the Arachnological bulletin of the Middle East and North Africa. Thirty two issues of eight volumes were published till now dealing with arachnids of different orders, Araneida, Opilionida, Pseudoscorpionida, Scorpionida, Solpugida, and pompilid enemies of spiders. He was the author of most of the published material. Other authors of different countries enriched *Serket* with their works. His bulletin did not prevent him from publishing through international arachnological congresses (Panama, 1983; Geneva, 1995; Edinburgh, 1997 & South Africa, 2001).

The study of Egyptian spiders is the main topic in his works (1985-2002). In addition to his new locality records and other works, he published a list of Egyptian spider genera (1987b), an annotated checklist of Egyptian spider species (1990a), the distribution of spider genera in Egypt (1992) and recently a list of Egyptian spiders, revised in 2002 (2002c). [The increase in the number of discovered species of spiders from Egypt is plotted in Fig. (1).] One of his topics is the study of spiders in protected areas of Egypt, e.g. Wadi El-Raiyan (1991a) and coastal protected areas on Aqaba gulf (2003). He also published a book (in Arabic) on the Egyptian Arachnids (El-Hennawy, 2002f). His work on the first record of Amblypygi from Egypt (El-Hennawy, 2002e) tells us that there are many species and genera of spiders and other arachnids to be discovered in Egypt. In addition to identifying thousands of specimens studied in universities theses and other works, he also encouraged the study of biological aspects of different spider species (see part IV of this work) and participated in some of them (El-Hennawy & Mohafez, 2003 and Sallam & El-Hennawy, 2003).

III. Universities Theses

There were two unsuccessful trials to prepare M.Sc. theses in Cairo University (Faculty of Science) in the 1950's and 1960's. After a long period of quiescence, a "diapause", the universities began to activate the study of spiders again.

[The researchers in the field of agriculture in Egypt used to say "true spiders" for spiders to distinguish between them and mites, which are widely studied in their field of work. Hence, this erroneous term is found in the titles of their theses and papers.]

1. In 1988, Ashraf Rahil presented his M.Sc. thesis: "Ecological and biological studies on the spiders at Fayoum" to Faculty of Agriculture, Cairo University (El-Fayoum). He collected spiders of 11 families (20 genera and 22 species) from El-Fayoum governorate associated with two field crops (cotton and cucumber) and studied biology of two spider species of families Clubionidae and Theridiidae.

2. In 1988 also, Mostafa El-Mehalawy presented his M.Sc. thesis: "Some studies on spider families of Al-Gharbia governorate" to Faculty of Science, Tanta Uinversity. He collected spiders of six genera from El-Gharbia governorate. He erroneously recorded *Oecobius teliger* Cambridge, 1872 (Family Oecobiidae) as new species from Egypt.

Both Rahil and El-Mehalawy did not continue their studies on spiders for Ph.D. degree.

3. In 1996, Gihan Sallam presented her M.Sc. thesis: "Studies on true spiders in Giza governorate" to Faculty of Agriculture, Cairo University. Her study included a survey of spiders in Giza governorate (August 1992 - December 1994) among fruit trees *(i.e.* apple, pear, grape, peach, olive, citrus, guava, and mango), field crops *(i.e.* cotton, maize and soybean) and ornamental plants *(i.e.* dadhi, mulberry, diafla, and daisy). She recorded 25 species of 18 families (Shereef *et.al.*, 1996). The thomisid *Xysticus tristrami* (Cambridge, 1872) was recorded in Egypt for the first time below apple trees. Salticidae and Clubionidae were the most abundant families. Biological aspects of *Cheiracanthium* sp. (Miturgidae) and *Plexippus paykulli* (Audouin, 1825) (Salticidae) were studied at 25°C and 60-70% R.H., feeding on *Ceratitis capitata* adults and *Spodoptera littoralis* larvae (1-4 stages) respectively (Rakha *et.al.*, 1999; Shereef *et.al.*, 1999).

4. In 2002, Sallam presented her Ph.D. thesis: "Studies on true spiders in Egypt" to Faculty of Agriculture, Cairo University. Her work can be summarized in: A survey of spiders was carried out in four governorates of both Lower Egypt (El-Qalyubia and El-Sharqia) and Middle Egypt (El-Fayoum and Beni-Suef) during the period from

August 1996 to December 1998. Most of the collected species, of 17 families (23 genera and 25 species), were recorded from the four governorates for the first time. The relationship between spiders abundance, temperature and relative humidity in the four governorates was studied in association with the cultivated plants, i.e. olive, orange, grape and apple. The highest population of spiders was recorded during summer extended to autumn (Sallam, 2002b). The biological aspects of *Thomisus spinifer* Cambridge, 1872 were studied under laboratory condition at 25°C and 60-70% R.H. The spiderling instars 1-3 were reared on the red spider mite *Tetranychus urticae*, while other spiderling instars and adults were reared on the adults of the fruit fly *Ceratitis capitata*. The fungicides were slightly harmful (25-50 %) to spiders. The organophosphorus compound *Malathion* was obviously harmful (>75%) to spiders. The mineral oil *KZ* was moderately harmful (50-75%) on the population density of spiders. The acaricides *Vertimec*, *Ortus* and *Cascade* were harmful (>75%) to spiders, while *Challenger* was moderately effective (50-75%) against spiders.

5. In 2000, Mohamed El-Erksousy presented his Ph.D. thesis: "Studies on some true spiders in Egypt" to Faculty of Agriculture, Al-Azhar University (Cairo). [Note. His M.Sc. was on mites.] He carried out a two years survey of spiders (1996-1998) in 12 governorates in Upper Egypt (El-Giza, El-Fayoum and Beni-Suef), Lower Egypt (El-Qalyoubia, El-Gharbiya, El-Menofyia, El-Beheira, Sharkia, Kafr El-Sheikh, El-Dakahlia and Suez Canal) and Cairo to record 37 species of 18 families on different crops. Spider populations in cotton and clover crops were studied (1997-1998) in El-Beheira and El-Fayoum governorates. The seasonal fluctuations of spiders were studied in El-Beheira and Beni-Suef governorates to record the incease of spiders by increasing hygrothermic conditions. The highest population was in June-August while the lowest population was in April-May. The effect of pesticide application, for cotton pests control, on spider population was studied to find that the percentage reduction in spider final population varied greatly according to their families. The life cycle of *Crustulina conspicua* (Theridiidae) was studied under laboratory conditions (26°C, 60-70% R.H.), feeding on the spider mite *Tetranychus urticae*.

6. In 2000 too, Mohamed Mohafez presented his M.Sc. thesis: "Studies on true spiders in Sohag governorate" to Faculty of Agriculture, Al-Azhar University (Cairo). His work included a survey of spiders on 10 different crops in seven districts of Sohag governorate during two successive years. Collected spiders were classified into 19 families (Metwally *et.al.*, 2002a). He studied the population density and seasonal fluctuation of spider species in relation with different crops during two years (Metwally *et.al.*, 2002b). He also studied the biological aspects of *Hersilia caudata* Savigny, 1825 (Hersiliidae) under laboratory conditions, 26-28^{o}C and 60-70% R.H. Both mating and feeding behaviours were described (Metwally *et.al.*, 2001).

7. In 2003, Naglaa Ahmed presented her M.Sc. thesis: "Studies on some arthropods inhabiting cucurbits and beans." to Faculty of Agriculture, Cairo University. She surveyed spiders and other arthropods inhabiting fields of four legume and five cucurbit crops. Their seasonal abundance was also studied in El-Qanater agricultural research station. Sixteen families of spiders were recorded (33 genera and 36 species) during survey. She studied the life cycle of *Anelosimus aulicus* (C.L. Koch, 1838), family Theridiidae, under laboratory conditions (Hussein *et.al.*, 2003). Different instars were reared on *Tetranychus urticae*, *Aphis craccivora* or on a mixture of both of them. Prey consumption was calculated for different stages. Effect of different diets on fecundity of the spider was studied. Mating behaviour was also described.

8. In the same year, El-Sayed Hamada presented his M.Sc. thesis: "Studies on true spiders associated with some vegetable crops." to Faculty of Agriculture, Menoufia

University. He collected spiders of 14 families from ten vegetable crops at Gharbia governorate during two successive years by two methods of collecting (pitfall traps and picking up with the hands). The most dominant family was Lycosidae followed by Linyphiidae and Philodromidae (Abo-Taka *et.al.*, 2003a). He also reared the linyphiid spider *Erigone dentipalpis* (Wider, 1834) and the theridiid spider *Theridion melanostictum* O.P.-Cambridge, 1876 under laboratory conditions, feeding on the two-spotted spider mite *Tetranychus urticae* and the green aphid *Brevicoryne brassicae*. The rate of prey consumption was recorded (Abo-Taka *et.al.*, 2003b and 2004). The effects of three different pesticides were studied in the field and laboratory.

9. And also in 2003, Mamdouh Ibrahim presented his M.Sc. thesis: "Studies on some true spiders associated with certain fruit trees in Ismailia governorate" to Faculty of Agriculture, Al-Azhar University (Cairo). His work included a survey of spiders of 22 families on different fruit trees in six regions in Ismailia governorate during two successive years. In the same time, he studied the population density and frequency occurrence of spider species in fields of Mango trees at Serabium locality. He also studied the biology of two spider species, the liocranid *Mesiotelus tenuissimus* (L.Koch, 1866) and the philodromid *Philodromus glaucinus* Simon, 1870, under laboratory conditions.

IV. Ecological and Applied Research

In the 1960's, spiders were increasingly mentioned in numerous studies by Ahmad H. El-Kifl as important creatures among the soil fauna (e.g. El-Kifl, 1969). He was a pioneer in the agricultural studies of soil fauna in Egypt. A few researchers continued in the same field to mention spiders mostly as a group and sometimes identified to families (e.g. Negm *et.al.*, 1976).

Near the end of the 1990's, a good cooperation between ecology and taxonomy, or say between applied and pure trends of science, yielded the first published paper in this field in Egypt. Prof. Dr. Samir Ghabbour encouraged this new trend of research and had his important role in the first work which was entitled: "Spider populations associated with different crops in Menoufiya governorate, Nile Delta, Egypt." (Ghabbour *et.al.*, 1999). In that work, a survey on spiders in 18 different agricultural crops in the southern Nile Delta was carried out in 1996, using pitfall traps. In summer crops, density of spider individuals was 2.28±1.29 per trap, compared with 2.38±1.69 in winter crops. Highest densities in summer crops were in tomato, eggplant, and cucurbit cultivations, while in winter occurred in caraway, cabbage and onion cultivations. Sweet potatoes had the lowest density. Densities in spring varied from 0.4/trap in taro to 6.55/trap in caraway cultivations. It appeared that plants with a dense foliage covering the ground (sweet potatoes and taro), constrain the movement of roaming spiders. Ten spider families were recorded in winter crops compared to twelve in summer. Lycosidae was dominant in both seasons, constituting about 80%, followed by Linyphiidae, Philodromidae, Gnaphosidae and Tetragnathidae. Males were trapped in higher numbers than females. Juveniles constituted 23-26% of the trapped samples, while subadults were more abundant in winter. Female lycosids carrying egg sacs had two peaks; one in spring and one in summer, but none was observed in winter. Correspondence analysis had shown that *Zelotes* complex was more associated with cabbage, and a group of *Lycorma* ferox, Thanatus albini,* Dictynidae, and Clubionidae, with peas, while *Erigone dentipalpis,* Philodromidae, Tetragnathidae and *Dysdera* spp. were more associated with caraway. On summer, *Prinerigone vagans, E. dentipalpis,* Linyphiidae, Philodromidae and Salticidae were more associated with potato and Soya

bean crops, while *L. ferox, T. albini, Zelotes* complex and *Trachyzelotes* sp. were more associated with cotton. [**Lycorma = Hogna* in recent taxonomic works]

One of the three authors of that, mentioned above, work published another related work on: "Seasonal abundance and daily activity patterns of spider fauna in some vegetable crops in Menoufiya governorate, Egypt." (Hussein, 1999). In his work, diversity, seasonal abundance and diurnal-nocturnal activity of spider population under 8 vegetable crops were studied in an agro-ecosystem in Menoufyia governorate, Southern part of Nile Delta, Egypt. A Total of 516 individuals were caught using pitfall traps during the study period. Six species belonging to six families were identified. Lycosidae was the dominant family, 86.42% of the populations, followed by Philodromidae, Linyphiidae and Gnaphosidae, while Theridiidae and Salticidae were the rare families in occurrence. *Thanatus albini* (Philodromidae) was the dominant species (5.43%). The peak of activity (19 ind/hr) and higher values of diversity (9 species) were recorded in summer, while the lowest were in winter (0.08 ind/hr and 3 species respectively). *Lycorma ferox* (Lycosidae) is active only in night-time as well as *Setaphis subtilis* (Gnaphosidae) which showed major activity (75%) during night against 25% on daytime. *Erigone dentipalpis* (Linyphiidae) and *T. albini* are completely active in daytime, Lycosidae (except *L. ferox),* Linyphiidae (except *E. dentipalpis)* showed major activity on daytime (91.10, 84.21%, respectively). The 3 different daytime parts (the early, mid day and the later third) showed similar values of activity, diversity, as well as the nocturnal activity in summer, while winter recorded the lowest values and notable fluctuations between night and daytime. The high abundance of spiders in August seems to be a result of a combination of 3 factors, dense vegetation cover, high temperature and enough relative humidity.

The third work, which was published before the two mentioned above, was a study on the "Biodiversity of spiders in the western desert of Egypt in relation to agriculture and land reclamation" (Hussein *et.al.*, 1998). Spider biodiversity was studied in 5 locations in the Western Desert of Egypt : Siwa Oasis, Wadi Natron, Wadi El-Raiyan, Tahrir Province and the New Valley. Siwa Oasis was considered as a base for comparison for its richness and high variety abundance of spider fauna. Each of the studied areas was characterized by certain spider species. The agro-ecosystems of Nile Delta are characterized by 10 families of spiders different from those of the studied locations. *Latrodectus tredecimguttatus* (Theridiidae) of the genus of the black widow spider, was first recorded from the Western Desert of Egypt. Presence and densities of *Thanatus albini* (Philodromidae) and *Lycorma* sp. (Lycosidae) could be considered as indicators for changes in the desert ecosystem due to human activities.

Hussein (2001a) published his work on "Soil pricking" as a new, easy, simple, and inexpensive agricultural method, without chemicals application, to intensify spider efficiency as biological control agent. It aims saving enormous efforts for mass rearing of spiders as biological control agents against various pests. Pricking the previously irrigated soil to 7-8 cm depth using a stick (of 1/2 inch diameter) to create holes with 50-60 cm distance in between. These holes encourage the wandering spiders to reside in the pricked hole, spinning nets on the external edge of holes, catching preys in the area and on surrounding plants. Applying this method led to intensification and increasing the spider population to 76% and 107% in cucurbits and lettuce, respectively during 1998, and 86% and 85% in cucurbits and peanut fields, respectively in 1999 season. Intensifying spiders population led to reduction of different pests e.g. aphids, jassids, phytophagous mites, white fly, lepidopteran larvae and *Nizara viridula* with

considerable reduction rate 39.64%, 49.45%, 16.67%, 50.48%, 33.33% and 21.14% respectively. Moreover no harmful effects for the natural enemies of insect pests were observed e.g. *Coccinella* sp.

In the same year, Hussein (2001b) published his study on the effects of mulching and holing on spider behaviour. He found that spiders behaviour was considerably affected in holing area and that the established webs increased to 19%, 52%, 76% and 85% after 2, 4, 6 and 8 weeks respectively.

Hussein *et.al.* (2002) studied the effect of the mineral oil *CAPL 1* on spiders. An experiment of completely randomized design was carried out along two seasons, 1999 and 2000, to clarify effect of the mineral oil *CAPL 1* in comparison with *vertimec* pesticide on the population density of soil fauna. Results showed that 6 families of spiders were occurred in the tomato plantation in Berma village, Gharbia governorate. The dominant family of spiders was Lycosidae (74.1% of the total spider populations) and the rarest family was Theridiidae. Density of the spiders increased in the mineral oil plots with 25% and 40% during 1999 and 2000 respectively. A preliminary test was carried out in the laboratory to determine whether the oil is attractive or not to the spiders. Results of this test were positive.

Continuing the study of biological aspects of Egyptian spider species, El-Hennawy & Mohafez (2003) studied the life history of the eresid *Stegodyphus dufouri* (Audouin, 1825) under laboratory conditions, feeding on different kinds of prey for different instars of spiderlings. Some spiderlings were reared together (communal rearing). The second generation was also kept together for more observation. Behavioural observations were reported on this spider both in nature and laboratory. These observations lead to a conclusion that the behaviour of this species is a step on the way to social life.

Also, Sallam & El-Hennawy (2003) studied some biological aspects of the titanoecid *Nurscia albomaculata* (Lucas, 1846) which was found in greenhouses in Dokki, Giza. Its life cycle was studied in laboratory. Different instars were reared on different stages of larvae of cotton leaf worm. Food consumption was also studied, in addition to some biological and ethological aspects.

V. Artificial Works

Depending on the general ignorance of spiders classification and biology, some researchers found the climate appropriate to publish "artificial" works on spiders. I could not add those **false** works to the bibliography at the end of this work, but I have to discuss them here briefly.

1) Abdel-Rahman, S.I., Ibrahim, A.A. & El-Erksousy, M.H. (2001) Laboratory studies on the web-weaver spider *Dictyna latens* (Fabricius) (Araneida : Dictynidae), as a predator on two prey species: *Spodoptera littoralis* (Boisd.) and *Tetranychus urticae* Koch. *Proc.1st integrated pest management conf.*: 179-182.

The authors did not tell us how they could identify their species *Dictyna latens*. Indeed, this species is not recorded till now from Egypt. Hence, the published data are dubious

2) El-Erksousy, M.H., Shoeib, A.A. & Dahi, H.F. (2002) Studies on biological control using the spider *Anelosimus oulicus* (Theridiidae). *Proc.2nd Int.conf.plant protection research inst.*: 1-2.

The authors reared their species, of 5 spiderling instars, feeding on the cotton leaf worm, *Spodoptera littoralis* (Boisd.). They recorded that their spider fed on about 10 larvae per day during the 5th instar, and that feeding needs 2-3 minutes per prey !!

The name of the spider is misspelled everywhere in the paper as *A. **o**ulicus* instead of *A. **a**ulicus* !!.

3) Fawzy, M.M.H. & El Erksousy, M.H.M. (2002) Description of new comb-footed spider *Theridion egyptium* sp.n. in Egypt (Araneae: Theridiidae). *Proc.1st conf.central agric.pesticide lab.*: 831-835.

The authors described the male and female of a new species without comparing their specimens with specimens, descriptions or drawings of other species of the same genus, and without consulting any specialist in Egypt or any other country. They prepared slides of their specimens as in case of mites. This yielded very ambiguous drawings in addition to their poor quality (Fig. 2). The work is merely a grouping of mistakes. It is enough to mention here that one of their drawings (Fig. 3) included a cribellum, while any beginner in the field of araneology must know that this organ is neither found in genus *Theridion* nor any other genus of family Theridiidae.

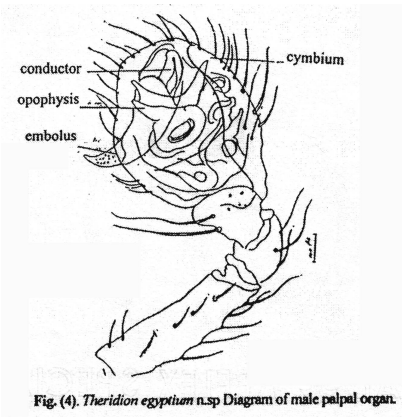

Fig. 2. Fourth figure in Fawzy & El Erksousy (2002).

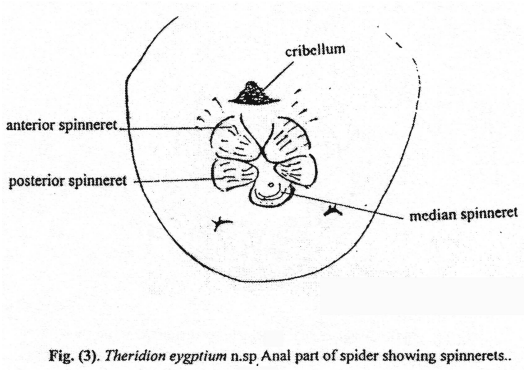

Fig. 3. Third figure in the same work.

4) El-Erksousy, M.H., Mousa, G.M. & Gomaa, W.O. (2002) The spider *Theridion egyptium* Fawzy and Elerksousy as a biological control agent on cotton aphid, *Aphis gossypii* Glover. *Proc.2nd Int.conf.plant protection research inst.*: 25-26.

The authors said that their spider had only two spiderling instars after emerging from the egg until reaching maturity, while five instars are the minimum known number in spiders (Foelix, R.F. 1996. *Biology of Spiders*. Second Edition. Oxford University Press & Georg Thieme Verlag, New York, Oxford. 330 pp.: p.222). Also, they mentioned that the life cycle was about 40 days.

5) El-Erksousy, M.H. (2002) Biological studies on the spider *Theridion egyptium* Fawzy And Elerksousy. *Proc.2nd Int.conf.plant protection research inst.*: 40-42.

Feeding on the two-spotted spider mite *Tetranychus urticae*, the life cycle of the spider was about 43 days. But also, there were only two spiderling instars as in the predecessor paper.

Note. Some works were published in obscure periodicals, so they were not available to the author to be included in this review.

VI. Bibliography

Abo-Taka, S.M., Hussein, A.M., Osman, A.A., Zohdi, G.I. & Hamada, E.G.I. 2003a. Ecological studies on spider families associated with some vegetable crops (Arachnida: Araneida) in Egypt. *Serket*, 8(4): 135-141.

Abo-Taka, S.M., Hussein, A.M., Osman, A.A., Zohdi, G.I. & Hamada, E.G.I. 2003b. Studies on some biological aspects of *Erigone dentipalpis* (Wider, 1834) (Arachnida: Araneida: Linyphiidae). *Serket*, 8(4): 142-146.

Abo-Taka, S.M., Hussein, A.M., Osman, A.A., Zohdi, G.I. & Hamada, E.G.I. 2004. Studies on some biological aspects of *Theridion melanostictum* O.P.-Cambridge, 1876 (Arachnida: Araneida: Theridiidae). *Serket*, 9(1): 5-9.

Ahmed, N.F.R. 2003. *Studies on some arthropods inhabiting cucurbits and beans*. M.Sc. Thesis, Fac. Agric. Cairo Univ., 105pp.

Audouin, V. 1825. *Explication sommaire des planches d'Arachnides de l'Égypte et de la Syrie, publiée par Jules-César Savigny*. In: *Description de l'Égypte ou Recueil des observations et des recherches qui ont été faites en Égypte pendant l'Expédition de l'armée française. Histoire Naturelle*. Tome Premier 1809. Paris. 4e partie, pp. 99-186. Atlas: pls. 1-9 (Arachnides).

Audouin, V. 1827. *Ditto*. 2nd edition. vol.22, pp. 291-430.

Audouin, V. 1993. *Ditto*. Edited by: H. K. El-Hennawy (1st part) *Serket*, 3(2): 33-76, (2nd part) *Serket*, 3(3): 77-121, (3rd part) *Serket*, 3(4): 122-171.

Cambridge, O.-P. 1870. Notes on a collection of Arachnida made by J. K. Lord, Esq., in the Peninsula of Sinai and on the African borders of the Red Sea. *Proc.Zool.Soc.Lond.*, 1870, pp.818-823, pl.50.

Cambridge, O.-P. 1872a. General list of the spiders of Palestine and Syria, with descriptions of numerous new species and characters of two new genera. *Proc.Zool.Soc.Lond.*, 1872, pp.212-354, pl.13-16.

Cambridge, O.-P. 1872b. Descriptions of twenty-four new species of Erigone. *Proc.Zool.Soc.Lond.*, 1872, pp.747-769, pl.65-66.

Cambridge, O.-P. 1874. On some new species of Drassides. *Proc.Zool.Soc.Lond.*, 1874, pp.370-419, pl.51-52.

Cambridge, O.-P. 1876. Catalogue of a collection of spiders made in Egypt, with descriptions of new species and characters of a new genus. *Proc.Zool.Soc.Lond.*, 1876, pp.541-630, pl.58-60.

Denis, J. 1935. Sur deux araignées de Cyrénaïque. *Ann.Mus.Civ.St.Nat.Giacomo Doria (Genova)*, 57: 100-104, pl.1.

Denis, J. 1936. On a collection of spiders from Algeria. *Proc.Zool.Soc.Lond.*, 1936: 1027-1060, 5pls.

Denis, J. 1944. Descriptions d'Araignées Nord-Africaines. *Bull.Soc.Hist.nat.Toulouse*, 79(1): 41-57, 2pls.

Denis, J. 1947a. Deux rectifications synonymiques concernant les araignées. *Bull.Soc.Hist.nat.Toulouse*, 82: 103-4.

Denis, J. 1947b. Results of the Armstrong college expedition to Siwa oasis (Libyan desert), 1935. *Bull.Soc.Fouad 1er Entom.*, 31: 17-103, 6pls.

Denis, J. 1948. A new fact about *Erigone vagans* Aud.and Sav. *Proc.Zool.Soc.Lond.*, 1948: 588-590.

Denis, J. 1962. Notes sur les erigonides. XXI. *Brachycerasphora*, nouveau genre nord-africain. *Bull.Mus.natn.Hist.nat.Paris*, 34: 239-246.

Denis, J. 1965. Les Araignées du Fezzân. *Bull.Soc.Hist.nat.Afr.N.*, 55: 103-144.

El-Erksousy, M.H.M. 2000. *Studies on some true spiders in Egypt*. Ph.D. Thesis, Fac. Agric. Al-Azhar Uinv. (Cairo) 132 pp.

El-Hennawy, H.K. 1985. Preliminary notes on the biology, distribution, and predatory behaviour of *Pseudopompilus humboldti* (Dhlb.) (Hymenoptera: Pompilidae). [Abridged] *Proc.Egypt's National Conf.Ent.*, Cairo 1982, vol.1: 33-48.

El-Hennawy, H.K. 1986. On the relation between *Stegodyphus dufouri* (Audouin) 1827 (Araneae: Eresidae) and *Pseudopompilus humboldti* (Dahlbom) 1845 (Hymenoptera: Pompilidae). *Proc.IX Int.Congr.Arachnol.*, Panama 1983, pp.91-93.

El-Hennawy, H.K. 1987a. Preliminary notes on the biology, distribution, and predatory behaviour of *Pseudopompilus humboldti* (Dhlb.) (Hymenoptera: Pompilidae). *Serket*, 1(1): 1-11.

El-Hennawy, H.K. 1987b. A list of Egyptian spider genera. *Serket*, 1(1): 12-14.

El-Hennawy, H.K. 1987c. New records of *Stegodyphus dufouri* (Audouin) 1825 (Araneida : Eresidae) from Egypt. *Serket*, 1(1): 19.

El-Hennawy, H.K. 1988. *Hasarius adansonii* (Audouin, 1825) (Araneida : Salticidae) in Egypt. *Serket*, 1(3): 21.

El-Hennawy, H.K. 1990a. Annotated checklist of Egyptian spider species (Arachnida : Araneae). *Serket*, 1(4-5): 1-49.

El-Hennawy, H.K. 1990b Arachnida in the diet of *Acanthodactylus scutellatus* (Audouin, 1825) (Reptilia: Lacertidae). *Serket*, 2(1): 1-8.

El-Hennawy, H.K. 1991a. Arachnida of Wadi El-Raiyan (Egypt). *Serket*, 2(3): 81-90.

El-Hennawy, H.K. 1991b. New Locality Records of Thomisidae in Egypt (Arachnida : Araneida). *Serket*, 2(3): 91-92.

El-Hennawy, H.K. 1992. Distribution of Spider Genera in Egypt (Arachnida : Araneida). *Serket*, 3(1): 1-32.

El-Hennawy, H.K. 1994a. Index Aranearum. Part 1. (Liphistiidae, Atypidae, Antrodiaetidae, Cyrtaucheniidae, Idiopidae). *Serket*, 4(1): 1-32.

El-Hennawy, H.K. 1994b. Index Aranearum. Part 2. (Ctenizidae, Actinopodidae, Migidae, Mecicobothriidae, Microstigmatidae, Hexathelidae, Dipluridae). *Serket*, 4(2): 33-62.

El-Hennawy, H.K. 1995. Index Aranearum. Part 3. (Nemesiidae, Barychelidae). *Serket*, 4(3): 63-91.

El-Hennawy, H.K. 1996a. Index Aranearum. Part 4. (Theraphosidae, Paratropididae). *Serket*, 4(4): 92-142.

El-Hennawy, H.K. 1996b. A spider (*Lycosa* ? sp.) (Araneida: Lycosidae) providing a shelter for its predator *Paracyphononyx ruficrus* (Klug, 1834) (Hymenoptera: Pompilidae). *Revue suisse de Zoologie*, vol.hors série I: 185-188.

El-Hennawy, H.K. 1997a. Notes on *Pseudopompilus humboldti* (Dahlbom, 1845) [Hymenoptera : Pompilidae] and *Stegodyphus lineatus* (Latreille, 1817) [Araneida : Eresidae]. *Serket*, 5(2): 32-39.

El-Hennawy, H.K. 1997b. Index Aranearum. Part 5. (Hypochilidae, Austrochilidae, Gradungulidae, Filistatidae, Sicariidae, Scytodidae, Drymusidae, Leptonetidae). *Serket*, 5(3): 60-89.

El-Hennawy, H.K. 1997c. The Genera of Spiders. *Serket*, 5(4): 90-130.

El-Hennawy, H.K. 1998. Redescription of the male of *Dorceus quadrispilotus* Simon, 1908 from Egypt (Araneae: Eresidae). *Proceedings of the 17th European Colloquium of Arachnology, Edinburgh 1997* : 97-100.

El-Hennawy, H.K. 1999. Catalogue and Bibliography of Family Hersiliidae 1825-1998 (Arachnida: Araneida). *Serket*, 6(2): 45-72.

El-Hennawy, H.K. 2000a. The first landmark in the route of Egyptian Arachnology : "*Explication Sommaire des Planches d'Arachnides de l' Égypte et de la Syrie"* (1825). *Serket*, 6(4): 115-128.

El-Hennawy, H.K. 2000b. Catalogue and Bibliography of Family Oecobiidae 1809-1995 (Arachnida: Araneida). *Serket*, 7(1): 8-37.

El-Hennawy, H.K. 2001a. Photography of Arachnids, A simple technique. *Serket*, 7(3): 106-107.

El-Hennawy, H.K. 2001b. Arachnida and arachnology in Egypt. Unpublished poster, presented in the 15th International Congress of Arachnology, South Africa, March 2001.

El-Hennawy, H.K. 2001c. Catalogue and Bibliography of Genus *Cheiracanthium* C. L. Koch, 1839 (Arachnida: Araneida: Miturgidae). *Serket*, 7(4): 114-155.

El-Hennawy, H.K. 2002a. Spiders of Sinai (Egypt), a list of species (Arachnida: Araneida). *Serket*, 8(1): 29-34.

El-Hennawy, H.K. 2002b. Revision of the North African spider genus *Dorceus* C.L.Koch, 1846 (Araneida: Eresidae). *Serket*, 8(2): 57-72.

El-Hennawy, H.K. 2002c. A list of Egyptian spiders (revised in 2002). *Serket*, 8(2): 73-83.

El-Hennawy, H.K. 2002d. A seven-legged araneid spider from Egypt (Araneida: Araneidae). *Serket*, 8(2): 84-85.

El-Hennawy, H.K. 2002e. The first record of Amblypygi from Egypt. *J.Arachnol.*, vol.30: 452-453. (Proc.XV Int.Congr.Arachnol.)

El-Hennawy, H.K. 2002f. *The Egyptian Arachnids*. A book. Publication of National Biodiversity Unit, Egyptian Environmental Affairs Agency (EEAA), Nature Conservation Sector. (In Arabic)

El-Hennawy, H.K. 2003. Arachnids in three Egyptian coastal protected areas on Aqaba gulf (Red Sea). *Serket*, 8(4): 151-163.

El-Hennawy, H.K. & Mohafez, M.A. 2003. Life history of *Stegodyphus dufouri* (Audouin, 1825) (Arachnida: Araneida: Eresidae) in Egypt, A step on the way from asocial to social. *Serket*, 8(3): 113-124.

El-Kifl, A.H. 1969. The soil Arachnoidea of a farm at Giza, U.A.R. *Bull. Soc. Ent. Egypt*, 52: 413-428.

El-Mehalawy, M.H.M. 1988. *Some studies on spider families of Al-Gharbia governorate*. M.Sc. Thesis, Fac. Sci. Tanta Uinv., 138pp.

Forskål, P. 1775. *Descriptiones Animalium, Avium, Amphibiorum, Piscium, Insectorum, Vermium; quae in itinere orientali*. Ed. Carsten Niebuhr. Hauniae, 1775. 164 pp. (Copenhagen)

Ghabbour, S.I., Hussein, A.M. & El-Hennawy, H.K. 1999. Spider populations associated with different crops in Menoufiya governorate, Nile Delta, Egypt. *Egypt.J.Agic.Res.*, 77(3): 1163-1179.

Hamada, E.G.I.S. 2003. *Studies on true spiders associated with some vegetable crops*. M.Sc. Thesis, Fac. Agric. Menoufia Univ., 138pp.

Hassan, A.I. 1950. The Theraphosidae in Egypt, with a description of *Chaetopelma shabati* spec.nov.(Araneae). *Bull.Soc.Fouad 1er Entom.*, 34: 159-171.

Hassan, A.I. 1953. The Oecobiidae of Egypt. *Bull.zool.Soc.Egypt*, 11: 14-30.

Hassan, A.I. 1988. Feeding and feeding apparatus of *Chaetopelma shabati* Hassan, 1950. *Serket*, 1(2): 1-12.

Hussein, A.M. 1999. Seasonal abundance and daily activity patterns of spider fauna in some vegetable crops in Menoufiya governorate, Egypt. *Egypt.J.Agic.Res.*, 77(2): 677-690.

Hussein, A.M. 2001a. Soil pricking : A new agricultural practice to intensify spider efficiency as biological control agents. *Minufiya J. Agric. Res.*, 26(3): 701-713.

Hussein, A.M. 2001b. Effects of mulching and holing on spider behaviour : An ecological study. *Annals Agric. Sc., Moshtohor*, 39(3): 1801-1805.

Hussein, A.M., El-Hennawy, H.K. & Sayed, A.A. 1998. Biodiversity of spiders (Araneae) in the western desert of Egypt in relation to agriculture and land reclamation. *Bull.Fac.Agric., Univ.Cairo*, 49 (1998): 597-609.

Hussein, A.M., El Nenaey, H.M., El-Hennawy, H.K. & El Khateeb, H.M. 2002. Effect of the mineral oil: CAPL 1 on the spiders (Araneae) and other soil fauna in Tomato plantations, Nile Delta, Egypt. *Minufiya.J.Agic.Res.*, 27: 4(1): 899-909.

Hussein, A.M., Hassan, M.F. & Ahmad, N.F.R. 2003. Biological aspects of *Anelosimus aulicus* (C.L. Koch, 1838) (Arachnida: Araneida: Theridiidae) in Egypt. *Serket*, 8(4): 129-134.

Ibrahim, M.M.E. 2003. *Studies on some true spiders associated with certain fruit trees in Ismailia governorate*. M.Sc. Thesis, Fac. Agric. Al-Azhar Uinv. (Cairo) 135 pp.

Koch, L. 1875. *Aegyptische und Abyssinische Arachniden, gesammelt von Herrn C. Jickeli*. Nürnberg 1875. 96 pp., 7pls.

Linnaeus, C. 1758. *Systema Naturae*. Tomus I. Regnum Animale. Holmiae 1758. 10th edition. 824 pp. (Stockholm)

Metwally, A.M., Mowafi, M.H. & Mohafez, M.A. 2001. Biological aspects of *Hersilia caudata* Savigny, 1825 (Arachnida: Araneida: Hersiliidae). *Serket*, 7(4): 108-113.

Metwally, A.M., El-Naggar, M.E., Mowafi, M.H. & Mohafez, M.A. 2002a. Spiders associated with economic plants in Sohag, Egypt. *Serket*, 8(1): 24-28.

Metwally, A.M., Mowafi, M.H. & Mohafez, M.A. 2002b. Seasonal abundance of spider families inhabiting cultivation at Sohag governorate. *Al-Azhar J.Agric.Res.*, 36: 137-146.

Mohafez, M.A. 2000. *Studies on true spiders in Sohag governorate*. M.Sc. Thesis, Fac. Agric. Al-Azhar Uinv. (Cairo) 115 pp.

Negm, A.M., Abou-Ghadir, M.F. & Salman, A.G.A. 1976. Population trend and time of activity of certain true spiders collected from clover foliage at Assiut. *Agric.Research Review* 54: 87-91. (In Arabic)

Rahil, A.A.R. 1988. *Ecological and biological studies on the spiders at Fayoum*. M.Sc. Thesis, Fac. Agric. Cairo Univ., 133pp.

Rakha, M.A., Nawar, M.S. & Sallam, G.M.E. 1999. Biology of the spider *Cheiracanthium jovium* (Araneida : Clubionidae). *Egypt.J.Agric.Res.*, 77(4): 1619-1625.

Sallam, G.M.E. 1996. *Studies on true spiders in Giza governorate*. M.Sc. Thesis, Fac. Agric. Cairo Univ., 139pp.

Sallam, G.M.E. 2002a. *Studies on true spiders in Egypt*. Ph.D. Thesis, Fac. Agric. Cairo Univ., 144pp.

Sallam, G.M.E. 2002b. Survey and ecological studies on spiders in four governorates of Egypt. *Serket*, 8(1): 35-42.

Sallam, G.M.E. & El-Hennawy, H.K. 2003. Biological aspects of *Nurscia albomaculata* (Lucas, 1846) (Arachnida: Araneida: Titanoecidae) in Egypt. *Serket*, 8(4): 147-150.

Shereef, G.M., Nawar, M.S., Rakha, M.A. & Sallam, G.M.E. 1996. Ecological studies on spiders in Giza governorate. *Serket*, 5(1): 1-31.

Shereef, G.M., Rakha, M.A. & Sallam, G.M.E. 1999. Biology of the spider *Plexippus paykulli* (Araneida : Salticidae). *Egypt.J.Agric.Res.*, 77(4): 1627-1632.

Simon, E. 1880a. Liste d'Arachnides recueillis aux environs immédiats d'Alexandrie (Égypte) par M.A.Letourneux. *Ann.Soc.ent.Fr.*, (5)10.Bull: 47-48.

Simon, E. 1880b. Description d'un nouveau genre d'Arachnides de la famille des Dictynidae. *Ann.Soc.ent.Fr.*, (5)10.Bull: 54-55.

Simon, E. 1880c. Descriptions de trois nouvelles espèces d'Arachnides d'Égypte, reçues de M. A. Letourneux. *Ann.Soc.ent.Fr.*, (5)10.Bull: 98-99.

Simon, E. 1882a. Viaggio ad Assab nel Mar Rosso,dei signori G.Doria ed O.Beccari con il R.Avviso "Exploratore" dal 16 Novembre 1879 al 26 Febbraio 1880. II. Étude sur les Arachnides de l'Yemen Méridional. *Ann.Mus.Civ.St.Nat.Genova*, 18: 207-260, pl.8.

Simon, E. 1882b. Descriptions d'espèces et de genres nouveaux de la famille des Dysderidae. *Ann.Soc.ent.Fr.*, (6)2.: 201-240.

Simon, E. 1884. Études Arachnologiques, 16e Mémoire, XXIII Matériaux pour servir à la faune des Arachnides de la Grèce. *Ann.Soc.ent.Fr.*, 6(4): 305-356.

Simon, E. 1889. Arachnide transcaspicae ab ill. Dr. G. Radde, Dr. A. Walter et A. Conchin inventae (annis 1886-1887). *Verh.zool.bot.Ges.Wien*, 39: 373-386.

Simon, E. 1890. Études Arachnologiques, 22e Mémoire, XXXIV Étude sur les Arachnides de l'Yemen. *Ann.Soc.ent.Fr.*, 6(10): 77-124.

Simon, E. 1892-1903. *Histoire Naturelle des Araignées*. 2éme ed. Paris. Tome I(1-4) 1892-1895: 1084 pp., Tome II(5-8) 1897-1903: 1080 pp.

Simon, E. 1893. Études Arachnologiques, 25e Mémoire, XL Descriptions d'espèces et de genres nouveaux de l'ordre des Araneae. *Ann.Soc.ent.Fr.*, 62: 299-330, pl.7.

Simon, E. 1898. Descriptions d'Arachnides Nouveaux des familles des Agelenidae, Pisauridae, Lycosidae et Oxyopidae. *Ann.Soc.ent.Belg.*, 42: 5-34.

Simon, E. 1899. Arachnides recueillis par M. C.-J. Dewitz en 1898, à Bir-Hooker (Wadi Natron), en Égypte. *Bull.Soc.ent.Fr.*, 1899, pp. 244-247.

Simon, E. 1901. Descriptions d'Arachnides nouveaux de la famille des Attidae (Suite)(1). *Ann.Soc.ent.Belg.*, 45: 141-161.

Simon, E. 1907. Arachnides recueillis en Égypte et le long du Nil Blanc par la Mission zoologique suedoise, 1901. Arachnida. In: *Results of the Swedish Zoological Expedition to Egypt and the White Nile*. 21: 1-10.

Simon, E. 1908. Étude sur les espèces de la famille des Eresidae qui habitent l'Égypte. *Bull.Soc.ent.Égypte*, 1: 77-84.

Simon, E. 1910. Catalogue raisonné des Arachnides du Nord de l'Afrique (1re partie). *Ann.Soc.ent.Fr.*, 79: 265-332. f. 1-13.

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